

REMARKS

Claims 1 to 10, 13, 14 and 21 to 46 are pending in the present application. Claims 1, 7, 21, 28, 34 and 40 are amended. Claims 23, 24, 42 and 43 are cancelled. No new matter has been added.

The disclosure stands objected to by the Office Action (hereinafter "Action") because the phrase "MINIMAL VOLUME" in the title is uncertain as to scope and meaning. Applicant has amended the title of the present application to read "HYDROCOLLOID COATING OF CELLS", as originally filed and indicated in the Filing Receipt mailed on November 29, 2001.

Claims 1 to 10, 13, 14 and 21 to 46 stand objected to by the Action because they are not in consecutive order. Applicant notes that pages 5 and 6 of the Amendment After Final appear to have been transposed prior to mailing. Applicant respectfully suggests that placing the pages in consecutive order, as numbered at the page bottom, should correct any issues with regard to claim numbering.

Claims 1 to 10, 13, 14 and 21 to 46 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Claims 23, 24, 42 and 43 are cancelled. Accordingly, the rejections under 35 U.S.C. 112, first paragraph of claims 23, 24, 42 and 43 is moot.

The Action states that the specification does not support using a capillary means by sucking a cell or embryo into a capillary as required by claim 1. However, the Action concedes that the specification supports sucking an embryo into a 1.5 mm diameter tube.

Applicant respectfully submits that a 1.5 mm diameter tube is commonly known in the medical industry as a “capillary tube”. An industry definition of capillary tube is “a tube of very fine bore” (See On-line dictionary at Dictionary.com.) An excerpt from a sales brochures for KimbleKontes, a capillary tubing manufacturer, submitted in an Information Disclosure Statement filed herewith, describes capillary tubing having a bore range between 0.75 mm and 3.00 mm. An excerpt from ThomasNet Industrial Newsroom, also submitted in an Information Disclosure Statement filed herewith, states that capillary tubing manufactured by Andrews Glass Co. for science and industry has a bore size ranging from 0.30 to 3.00 mm. Thus, Applicant respectfully submits that one skilled in the relevant art would understand a tube having a 1.5 mm bore to be a capillary tube. Thus, Applicant submits that the claimed subject matter of independent claim 1 and claims 2 to 10, 13, 14, 21, 22, 25 to 27, which depend directly or indirectly therefrom comply with the written description requirement. Moreover, claim 40, directed to a capillary is definite for the reasons just described.

The Action also states that support is not found in the specification for the ranges “1 to 5%” and “6 to 8%” recited in claims 1 and 28. Applicant respectfully points out that support for the ranges “1 to 5%” and “6 to 8%” recited in claims 1 and 28 may be found *inter alia* on page 16, lines 31 to 32, which states that coating thicknesses were 0.05 ± 0.005 , 0.03 ± 0.005 , 0.017 ± 0.003 , 0.15 ± 0.01 mm for LMP, ι and κ carrageenan and alginate coatings, respectively. Support may also be found in Fig. 8, in which the X axis indicates the coating thickness. Support may further be found in Fig. 9, which comprises cross-sections of LMP, alginate, κ carrageenan and ι carrageenan. Calculation achieved manually, by ruler, or by computer will reveal the thickness of the coating in an absolute way or as a percentage of the diameter of the cell, *i.e.* within the ranges “1 to 5%” and “6 to 8%”, as recited in claims 1 and 28.

Applicant submits that claims 1 to 10, 13, 14, 21, 22, 25 to 41 and 44 to 46 are definite. Thus, Applicant respectfully requests withdrawal of the rejections under 35 U.S.C. 112, first paragraph of claims 1 to 10, 13, 14, 21, 22, 25 to 41 and 44 to 46.

Claims 1 and 28 were rejected under 35 U.S.C. 112, second paragraph for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims were found confusing due to the use of the clause “producing a very thin uniform cross-linked hydrocolloid coating of a single cell produced by capillary means”. Applicant has amended claims 1 and 20 to claim a “micro-coating”. Applicant submits that claims 1 and 28 are now definite. Moreover, the title of the present application, which has been amended to read “HYDROCOLLOID COATING OF CELLS” is also definite.

Claims 21 and 40 stand rejected by the action as being unclear as to the meaning of “cell or embryo to be coated is maneuvered” and “minimal thickness”. Claims 21 and 40 have been amended to more definitely define sucking a cell or embryo into a capillary tube, thereby providing a micro-coating. Accordingly, claims 21 and 40 are now definite.

Claims 22 and 41 stand rejected by the action as being unclear as to how they provide further limitation of claims 1 and 28. Applicant respectfully submits that the current amendments to claims 1 and 28 render the limitation “wherein the coating is uniform” further limiting of claims 1 and 28, as now claimed. Accordingly, claims 22 and 41 are now definite.

Claims 7 and 34 stand rejected as being unclear in that they describe both egg and embryo. Claim 7 has been amended to claim a cell, as defined in claim 1. Claim 34 has been amended to claim an embryo, as defined in claim 28. Accordingly, claims 7 and 34 are now definite.

Applicant submits that claims 1 to 10, 13, 14, 21, 22, 25 to 41 and 44 to 46 are definite. Thus, Applicant respectfully requests withdrawal of the rejections under 35 U.S.C. 112, second paragraph of claims 1 to 10, 13, 14, 21, 22, 25 to 41 and 44 to 46.

Claims 1 to 5, 8 to 10, 13, 14 and 21 to 27 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,068,867 to Nussinovitch et al (hereinafter "Nussinovitch") in view of U.S. Patent No. 5,762,959 to Soon-Shiong et al. (hereinafter "Soon-Shiong") and U.S. Patent No. 5,693,514 to Dorian et al. (hereinafter "Dorian") and U.S. Patent No. 5,348,833 to Togawa et al. (hereinafter "Togawa"). Claims 23 and 24 have been cancelled, accordingly, the rejection of claims 23 and 24 is moot.

Applicants respectfully point out that none of Nussinovitch, Soon-Shiong, Dorian or Togawa, taken either alone or in combination, teaches the invention, as claimed in independent claim 1. Independent claim 1 now clearly provides a method of coating of a single cell with a micro-coating formed by capillary means. None of Nussinovitch, Soon-Shiong, Dorian or Togawa teaches a method of coating of a single cell with a micro-coating formed by capillary means. Rather, Nussinovitch teaches coating of a fungi or other tissue rather than coating of an isolated cell, as clearly claimed in claim 1. Dorian and Soon-Shiong teach entrapment of thousands of cells, rather than coating of a single cell, as clearly claimed in claim 1. Thus, the combination of Nussinovitch, Soon-Shiong and Dorian still fails to teach a method of coating of a single cell with a micro-coating formed by capillary means, as now claimed in claim 1. Moreover, the combination of Nussinovitch, Soon-Shiong and Dorian would not work for the stated purpose, as presented by the Action. The cited combination fails to address the difficulties encountered when coating a single cell. For example, electrostatic attraction or repulsion forces are much more pronounced in single cell technology. Thus, were Nussinovitch, Soon-Shiong and Dorian combined, as suggested by the action, coating of a single cell could not be achieved absent further experimentation.

Togawa teaches a method of selecting and transferring a single cell using *adhesive* on a capillary wherein a cell is attached to adhesive on the tip of the capillary. Towaga fails to disclose a step of removing a cell from a solution of hydrocolloid by sucking the cell into a capillary to form a micro-coating, as is clearly claimed in claim 1. Thus, the cited combination of

Nussinovitch, Soon-Shiong, Dorian and Togawa fails to teach the invention of claim 1.

Moreover, neither Nussinovitch, nor Dorian nor Soon-Shiang provide any motivation for the cited combination with Togawa. In fact, Nussinovitch fails to discuss a coating thickness. However, it must be assumed that a coating of tissue must be of relatively greater thickness than the micro-coating of claim 1. Dorian (column 4) and Soon-Shiang (column 8-9) also teach away from the invention as claimed in claim 1 in that they present the benefits of thick coatings. Thus, absent hindsight of the Applicant's invention there is no motivation for the cited combination.

Since the combination of Nussinovitch, Soon-Shiong, Dorian and Togawa does not disclose or suggest all the limitations of claim 1 it does not render obvious claim 1, or claims 2 to 5, 8 to 10, 13, 14, 21, 22 and 25 to 27 that depend therefrom. Accordingly, the rejections under 35 U.S.C. § 103(a) of claim 1 and claims 2 to 5, 8 to 10, 13, 14, 21, 22 and 25 to 27 should be withdrawn and claims 1, 2 to 5, 8 to 10, 13, 14, 21, 22 and 25 to 27 should be allowed.

Claims 7 and 28 to 46 stand rejected under 35 U.S.C. § 103(a) as being obvious over the combination cited above and further in view of U.S. Patent No. 5,293,838 to Jorgensen et al. (hereinafter "Jorgensen"). Claims 42 and 43 have been cancelled, accordingly, the rejection of claims 42 and 43 is moot.

The combination of Nussinovitch, Soon-Shiong, Dorian and Togawa fails to disclose the present invention for at least the reasons discussed above. Jorgensen is cited for disclosing protecting an egg by encapsulating the egg in a gel material. However, Applicant respectfully submits that Jorgensen fails to disclose a method of coating a single cell with a micro-coating formed by capillary means, as is now clearly claimed in claim 1. Rather, Jorgensen is directed to a method for immobilizing eggs in a gel material. The gel material of Jorgensen forms a gel matrix of multiple eggs for protection of said eggs. Thus, Jorgensen fails to disclose coating of a single cell. Jorgensen further fails to disclose a micro-coating. Thus the cited combination of Nussinovitch, Soon-Shiong, Dorian, Togawa and Jorgensen fails to teach the invention as claimed

in independent claim 1. Claims 7, 28 to 41 and 44 to 46 depend either directly or indirectly from claim 1 and are thus distinguishable for at least the reasons discussed with respect to claim 1.

Since the combination of Nussinovitch, Soon-Shiong, Dorian, Togawa and Jorgensen does not disclose or suggest all the limitations of claim 7 and 28 to 41 and 44 to 46, it does not render obvious claims 7 or 28 to 41 or 44 to 46. Accordingly, the rejections under 35 U.S.C. § 103(a) of claims 7, 28 to 41 and 44 to 46 should be withdrawn and claims 7, 28 to 41 and 44 to 46 should be allowed.

Conclusion

In view of the foregoing, Applicants respectfully submit that all claims presented in this application patentably distinguish over the prior art and the cited combination of same. Accordingly, Applicants respectfully request favorable consideration and that this application be passed to allowance.

A petition for three months extension of time is filed simultaneously herewith. It is believed that the submission of this Amendment is timely. In the event that any extensions and/or fees are required for the entry of this Amendment, the Commissioner is specifically authorized to charge such fee to Deposit Account No. 50-0518 in the name of Steinberg & Raskin, P.C.

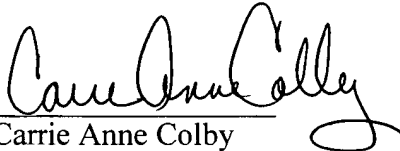
According to currently recommended Patent Office policy, the Examiner is specifically authorized to contact the undersigned in the event that a telephonic interview would advance the prosecution of this application.

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919.1002

An early and favorable action on the merits is earnestly solicited.

Respectfully submitted,
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